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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,587	06/06/2000	Marc W. Kauffman	D2253 CIP	8160

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EXAMINER	
SLOAN, NATHAN A	
ART UNIT	PAPER NUMBER
2614	6

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/588,587	KAUFFMAN ET AL.	
	Examiner	Art Unit	
	Nathan A Sloan	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The amendment filed 5/7/03 fails to comply with 35 U.S.C. 1.121, which requires that amended claims properly indicate the status of the claim. Claim 12 has been indicated as original when the claim is in amended form. In a telephone conversation with Wendy Koba on 10/29/2003, the examiner confirmed that applicant intended claim 12 to be examined in amended form. It is requested that applicant make correspondingly appropriate changes as required in response to this Office Action.

2. In response to the non-final Office Action mailed 5/7/03, applicant has amended claims 1, 3, 6-10, and 12 to correct typographic errors and / or more particularly claim the present invention. These amendments are addressed in the following responsive arguments and subsequent rejections.

3. Applicant's arguments filed 8/5/00 have been fully considered but they are not persuasive.

With respect to claims 1, 3-5, 7, and 13-30, applicant argues that Schwartzman does not simultaneous evaluation of ingress noise "as a function both of frequency and time so as to generate a map including both aspects." First, examiner notes that applicant agrees "Schwartman is directed to the problem of ingress noise at a particular frequency band ... and [uses] an FFT process to map data as a function of frequency." Applicant then asserts that "the concept of evaluating all frequency bands during a particular slice of time is not considered in

the Schwartman arrangement. Examiner disagrees. It is clear that the evalution over frequency bands is agreed to be fully disclosed by Schwartzman, and so the argument turns to evalutaiton at a time. Fast Fourier Transforms, by definition, involve sampling "the noise level of the frequency channel" as taught in col. 12:41-43. This sampling occurs by sampling band slices of a frequency channel *at a particular instance of time,* and may be performed *over a period of time or can be continuous* as clearly taught by Schwartman in the previously cited section col. 10:39-52. Thus, when performing a FFT frequency bands are evaluated simultaneously at instances of time and these results are mapped into memory. Therefore, examiner feels all of the limitations of claims 1, 3-5, 7, and 13-30 are met as addressed herein and upholds previous rejections.

With respect to claims 2 and 8-12, applicant again asserts that Schwartman fails to teach both time and frequency noise detection and that the claims cannot then be rendered obvious. Applicant then states that Schwartzman transforms data "into the time domain, but the frequency information is lost." Column 10, lines 45-50 clearly teaches that "to obtain the *correlated* power level data, the spectrum analyzer looks at the power level of a frequency channel at a particular instance of time. The *correlated* data is then stored ... [and] used as a useful indicator of the power on a particular channel." Thus, Schwartzman is clearly directed to sampling frequency bands at time intervals and evaluating the *correlated* data. Accordingly, previous rejections are upheld as addressed herein.

With respect to claim 6, applicant addressed the amended limitation that a noisy return path is removed rather than isolated and that this is not disclosed or suggested by Reichert, Jr. Examiner agrees that Reichert is directed to locating rather than removing sources of noise. This amended limitation is addressed in detail below.

Oath/Declaration

1. The Oath/Declaration is objected to because no claims to priority have been made to provisional application 60/138,933 or to application 09/074,851, now US Patent 6,321,384, as a continuation in part, which is a continuation of 08/347,573, both of which are claimed as priority in the first paragraphs of the amended specification.

Drawings

2. The drawings were received on 8/5/03. These drawings are approved.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3-7, and 13-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Schwartzman (6,385,773).

Schwartzman et al. (6,385,773) teach a system and method for switching frequencies in the presence of ingress noise.

With respect to claim 1, the claimed method for characterizing ingress events having return path communications in a plurality of frequency band is met by Schwartzman as seen in Figure 3. The claimed "detecting one or more ingress events in the return path over a pre-determined time period" is taught in column 6, lines 29-34. The claimed marking the frequency band and time interval "in which the ingress events exceeds a predetermined threshold" is taught with determination of noise is greater than a threshold, taught in column 9, lines 59-62, and storing data in memory indicating noise levels at a detected time, taught in column 10, lines 35-52. The claimed creation of a time/frequency map of the ingress events containing results of times and frequencies above a pre-determined threshold is taught in column 12, lines 41-50 with utilization of a Fast Fourier Transform and mapping data into memory over frequencies. This map may be created as a result of a sampling over a "pre-determined time period" as taught in column 10:45-52.

With respect to claim 3, the claimed evaluation of the time/frequency map is taught in column 12, lines 47-49. Schwartzman further teaches "mitigating the return path ingress, based on the evaluation of the time/frequency map" by selecting a different frequency based on the evaluation in order to reduce noise level, seen for example at step 410 of Figure 4.

With respect to claims 4 and 5, the claimed "attenuating the return path signal" based "on a power-level equalization algorithm" is taught in column 11, lines 64-67 and column 12, lines

1-8 by switching to a frequency channel having a lower power measurement in order to control noise.

With respect to claim 6, the claimed "removing the return path signal" is taught by Schwartzman via transitioning to a new frequency signal (col. 10:8-12), effectively "removing" that path of frequencies. This is also seen in Figure 3 at steps 308, 310, and 312.

With respect to claim 7, the claimed "summing the results of the marking process across a plurality of frequency bands" is taught in column 10, lines 32-52 by splitting up a frequency channel into multiple bands using a FFT and then examining the power level for the frequency channel using the band slice measurements. This process is also taught to be done "within a specific time interval" as claimed.

With respect to claims 13-16, the claimed performing of the method "at the head end," "substantially near the subscriber location," "at a test point in the network," and "at the head end of the network," are all met by performing the method of claim 1 at the head end 102 of Figure 2A.

With respect to claim 17, the claimed utilization of "ingress measurements extending across the return frequency band" is taught in column 9, lines 45-48.

With respect to claim 18, the claimed detection of ingress events within a "sub-band of the return frequency band" is taught in column 12, lines 50-54.

With respect to claims 19 and 20, the claimed taking place in an active or inactive "sub-band of the return frequency band" is taught met by Schwartman by frequency scanning and monitoring detected power levels. Schwartzman teaches analyzing the entire return frequency band and dividing this band up into frequency channels, which are iteratively analyzed.

Although the channels within the entire return frequency band aren't explicitly referred to as being "active" or "in-active," it is clear that some frequency channels will be active and others inactive. This is supported by the fact that Schwartzman shows analyzing both a frequency channel in use, claimed "active" and channels not in use, claimed "inactive" in order to determine if a better frequency channel may be switched to. This process is best understood with reference to Figure 4.

With respect to claim 21, the claimed "measuring an average return path signal power in the return frequency band, comparing the average return path signal power to a detection threshold, and determining the presence of an ingress event in the return frequency band based on the result of the comparison" is met as seen in Figures 3 and 4. As noted above the average power measurements across a frequency band are computed, taught in column 10, lines 39-45 and column 11 lines 15-18, and these measurements are used by the spectrum analyzer to compare power measurements to other frequency bands and determine a best path at steps 404, 408, and 410 of Figure 4.

With respect to claims 22 and 25, the claimed "retrieving information on channel usage to distinguish active sub-bands from inactive sub-bands" is taught in column 11, lines 41-48 with retrieving power measurements that are used to indicate if no data or signal is being transmitted over a certain frequency channel and are thus "inactive," as claimed, or available or as data carriers. These inactive frequency channels may be transitioned to from the active data carriers if the detected ingress is less than that of the active data carriers, seen at steps 408 and 410 of Figure 4.

With respect to claims 23-24 and 26-27, the claimed information on channel usage being retrieved "at the head end," and "substantially near the subscriber location" is met by retrieving the information at the head end 102 of Figure 2A.

With respect to claim 28, the claimed "estimating a power spectrum density of a return signal path" and correlation of PSD with stored PSDs is taught by Schwartzman as noted above in column 10, lines 39-52. A peak correlation is determined using the frequency with the least amount of noise (see Figure 3, item 304), and this frequency channel is then assigned for upstream communication (see Figure 3, item 312), meeting the claimed "created."

With respect to claims 29 and 30, the claimed active band being in use "by an in-home device" and a "communications gateway" is met by cable modem 120 of Figure 2A.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartzman (6,385,773).

With respect to claim 2, the claimed mapping of events above a pre-determined threshold with a "1" is not taught by Schwartzman. Examiner takes Official Notice that it is well known in the art to use a Boolean value to indicate a true or false condition. It would have been obvious for one skilled in the art at the time of the invention to modify the methods of Schwartzman by storing a Boolean value of "1" indicating the condition of exceeding a threshold of ingress noise in order to provide a simplified representation of noise events.

With respect to claims 8 and 9, the claimed labeling the ingress event as a wideband or narrowband ingress event if the sum obtained is below a pre-determined threshold is not explicitly taught by Schwartzman. However, in column 9, lines 41-55 Schwartzman teaches deriving a power level of a frequency channel presently in use, claimed narrowband, or the entire upstream band, claimed wideband. Threshold detection and comparison techniques are also taught by Schwartzman as noted above in response to claim 1. Furthermore, ingress events are recognized to be predominantly narrow band by Schwartzman as taught in column 4, lines 53-58. The detail of measuring power in a frequency for determining ingress events is noted taught in part in column 10, lines 20-38 for either the narrowband or wideband spectrum. While Schwartzman does not explicitly teach labeling the event as either a "narrowband" or "wideband" event, the methodology for determining if ingress is either narrowband or wideband is presented. It is therefore the position of the examiner that it would have been obvious for one skilled in the art at the time of the invention to explicitly classify an in ingress event as "narrowband" or "wideband" using the narrow and wideband ingress detection techniques of Schwartzman in order to provide an operator an easily understood summary as to whether a fault was wide-scale or on a narrowband.

With respect to claim 10, the claimed summing results across a plurality of time intervals within a specific frequency band is not explicitly taught by Schwartzman. However, in column 12, lines 41-53 Schwartzman teaches utilizing a Fast Fourier Transform as is known in the art. Examiner takes Official Notice that Fast Fourier Transforms are well known to be performed using either decimation in time or decimation in frequency. It would have been obvious for one skilled in the art at the time of the invention to modify the FFT techniques of Schwartzman to include summing results across time intervals in order to analyze ingress over a period of time in addition to at a specific frequency.

Claims 11-12 are met as noted above in response to claims 8-9, in view of the Official Notice regarding claim 10.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan A Sloan whose telephone number is (703)305-8143. The examiner can normally be reached on Mon-Fri 7:30am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703)305-4795. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-HELP.

NAS

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